

LONG ISLAND BOTANICAL SOCIETY NEWSLETTER

July - August 1995 Vol. 5, No. 4

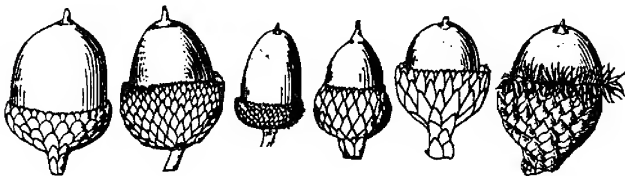
In This Issue

Steven Clemants has written an account of the Lemnaceae, the world's smallest flowering plants. This is a very interesting family that is used commonly in physiological research because it is so easy to grow in the lab. The account presented here includes keys to the species on Long Island and other information about the family.

John Turner has written an article about the Pine Barrens Plan. This is a comprehensive management plan for the central pine barrens.

LIBS is accepting nominations of individuals willing to serve as officers for the 1996-1997 term. If you are interested in serving in some capacity or know someone else who might be interested please contact **Vince Puglisi** (see Society Notes).

We had many people giving us new information on Gymnosperms of Long Island in response to the Gymnosperm Atlas (last issue). If you have not given us your updates please consider doing so. See Society News for an account of some updated info given us at the May meeting.



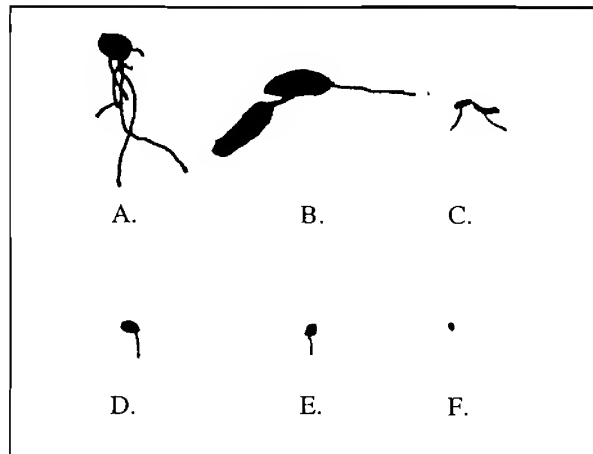
PROGRAMS

There are no programs scheduled for July or August.

Ann Johnson is scheduled to talk in September. Details will appear in the next Newsletter.

Lemnaceae: The world's smallest flowering plants

Few people realize that among the wonders of Long Island's flora are the world's smallest flowering plants. *Wolffia* is the smallest flowering plant in the world, not getting much larger than the period at the end of this sentence. I want to take this opportunity to acquaint you with the several members of this family that grow on Long Island. Much of the information I give here is derived from a two volume monograph of the family (Landolt, E. 1986-1987. The family of Lemnaceae - a monographic study. Ver. Geobot. Inst. Eidg. Tech. Hochschule, Stiftung R  bel, in Z  rich. 71. Heft and 95 Heft).



Life-size silhouette of Lemnaceae. A. *Spirodella polyrrhiza*; B. *Lemna trisulca*; C. *L. valdiviana*; D. *L. minor*; E. *L. perpusilla*; F. *Wolffia brasiliensis*

The Duckweeds and Water-meals are thought to be derived from the Araceae, the family that contains Jack-in-the-pulpit, Skunk Cabbage, *Diffenbachia* and many other large plants. The family is small with only 4 genera and 34 species. Because of its very small size the plant is fairly simple. There is a floating or submersed green blob which is called a thallus or frond, roots (which may be lacking), and flowers which often

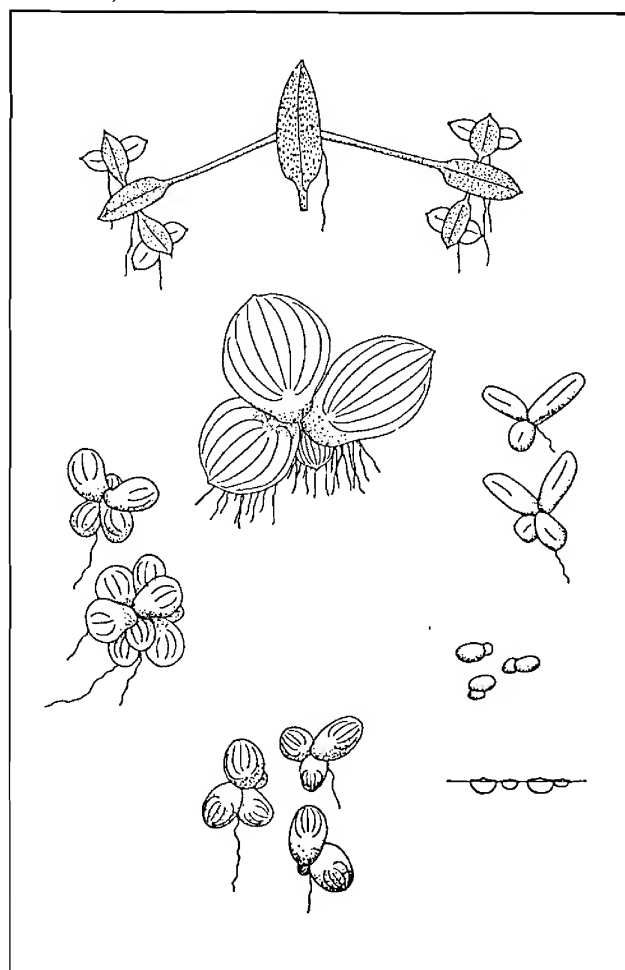
consist of a single anther or a single ovary and is formed in a pocket on the thallus. Unfortunately, most species of Lemnaceae in our area rarely flower (less than 6% of the specimens collected in the wild have lowers or fruits). In our area only *Lemna perpusilla* is commonly found flowering while *Spirodella polyrrhiza* very rarely flowers (less than 1% of the specimens are flowering or fruiting). Since they rarely flower in nature they reproduce vegetatively. If you look at a small cluster of thalli you will often see that they are attached or appear to be budding off a parent plant.

The duck weeds are important food sources for animals, particularly ducks which are important for dispersing the plant. Other animals that feed on the plant include beavers, cows, turtles, carp (which can often eliminate the Lemnaceae from an area, snails, and many insects. There is even a report of *Wolffia columbiana* and *W. borealis* in the traps of *Utricularia vulgaris*. It is not sure if the *Wolffia* thalli are digested in the traps.

We have, on Long Island, at least 6 species in 3 genera. These include: *Spirodella polyrrhiza*, *Lemna minor*, *L. trisulca*, *L. perpusilla*, *L. valdiviana*, and *Wolffia brasiliensis*. These species are often found mixed together in the same community so you will need to be careful to check all the specimens in case you have a different species mixed in. The following key can be used to separate these species. Please let me know of problems or suggestions for changing the key.

1. Plants without roots; thallus 0.5-1.5 mm long
 *Wolffia brasiliensis*
1. Plants with roots; thallus 2.5-8 mm long
 2. Roots 2 or more per thallus
 *Spirodella polyrrhiza*
 2. Roots 1 per thallus *Lemna*
 3. Thallus tapering to a long stipe persistently attached to the parent; submerged except when flowering *L. trisulca*
 3. Thallus without a stipe or the stipe very short and inconspicuous; floating
 4. Thallus symmetrical or nearly so; usually with red colored cells *L. minor*
 4. Thallus oblique or falcate, especially at the joint with the parent plant; without red colored cells
 5. Thallus obliquely obovate, with rounded sides, 1-2.5 mm long, 1-2 x as long as wide; 1 vein *L. valdiviana*
 5. Thallus oblong, with nearly parallel sides, 2.5-5 mm long, 1.5-3 x as long as wide; 3 veins *L. perpusilla*

***Lemna minor*, LESSER DUCKWEED.** This is probably the most common duckweed in our area. It may be difficult to separate this species from *L. perpusilla*. On fresh material look for the red colored cells to distinguish it from *L. perpusilla* and *L. valdiviana*. The technical characters that separate these two species are "Root sheath not winged; root mostly rounded; roots often longer than 3 cm;..." for *L. minor*; "Root sheath winged at the base; root tip usually sharply pointed; roots no longer than 3 cm;..." for *L. perpusilla* (Landolt, 1986).



Lemnaceae species (clockwise from top). *Lemna trisulca*, *L. valdiviana*, *Wolffia brasiliensis*, *L. minor*, *L. perpusilla*. (Center) *Spirodella polyrrhiza*.

Two additional species *L. obscura* and *L. turionensis* may be looked for in this area. Gleason and Cronquist and other authors usually do not separate these two species. *L. turionensis* has a line of distinct papules (small raised points) along the median line and often forms turions (over wintering bodies). *Lemna obscura* has a distinct papule near the tip of the thallus and is often gibbus (abruptly swollen on one side). I have not yet found

specimens of either of these species on Long Island but they both occur in the Northeastern states.

***Lemna perpusilla*.** This is apparently a rare species in our area, though it may often be confused with *L. minor* (see above). This species is often found flowering.

***Lemna trisulca*, STAR-DUCKWEED.** This is one of the easiest duckweeds to recognize. The thallus is long, narrow, and narrows down to a stipe at the base which is persistently attached to the parent plant, also look for the three teeth at the tip of the thallus. This species usually floats below the surface of the water except when it flowers or fruits. This species is apparently common in the area.

***Lemna valdiviana*.** This species is easily recognized by the single vein. All the other species in this area have three veins. It is apparently common in the area.

***Spirodella polyrrhiza*, GREATER DUCKWEED.** This species is easily recognized by the numerous roots (*Lemna* has one root, *Wolffia* has no roots). The lower surface is often purple-red. This species rarely flowers but is very common in the area.

A second species, *S. punctata*, should be looked for in the area. This species differs from *S. polyrrhiza* in having only 2-7 roots (usually 7-21 in *S. polyrrhiza*) and the thallus is 2.5-5 mm long and 1/2 - 3/4 as wide (5-8 mm long and 2/3 - 1 as wide in *S. polyrrhiza*).

***Wolffia brasiliensis*, WATER-MEAL.** This species is easily recognized by its lack of roots. *Wolffia* species are apparently fairly uncommon in the area. *W. brasiliensis* was once on the NYS Natural Heritage Plant List. Two other species, *W. borealis* and *W. columbiana* are known from the area (though not on LI). These three species can be separated by the following key.

- A. Thallus rounded above, not punctate and without a papule *W. columbiana*
- A. Thallus flattened above, the upper surface finely punctate, with one papilla
 - B. Upper side of thallus with a prominent papilla near the middle . . . *W. brasiliensis*
 - B. Upper side of thallus elevated distally into an evident terminal papilla . . *W. borealis*

***Wolffiella*.** The fourth genus of the Lemnaceae is *Wolffiella* which has one species in the area, but not on LI, *W. gladiata* (*W. floridana*) which should be looked for. This genus lacks roots (as does *Wolffia*) but the thallus is flat, linear to strap shaped and usually grows below the surface of the water.--
Steven Clemants

Pine Barrens Plan Nears Completion

As many LIBS members know, the Pine Barrens Commission has been working, over the past eighteen months, on the preparation of a comprehensive management plan for the central pine barrens.

Some of the more well-known components of the plan include the delineation of a 52,000 acre core preservation area to be preserved in its entirety, and a 48,000 acre compatible growth area in which limited environmentally compatible development may occur.

Seventy-five percent of the core area is proposed to be preserved through a combination of direct state/county acquisition and 25% via a regional transfer-of-development rights program, whereby several thousand Pine Barrens credits (PBC's) from the core would be sold to land owners located in the compatible growth area.

There are a number of less well-known elements of the Plan that will be of interest to LIBS members. For example, in the standards and guidelines section of the plan, clearing of native vegetation is strictly limited; no more than 25% of a five acre lot may be cleared.

While the plan does not require the use of native plants, it encourages their use in landscaping and discourages the planting of invasive, non-native species such as Japanese honeysuckle, multiflora rose, Norway maple, and crown vetch.

The Plan calls for the establishment of a Protected Lands Council to develop a series of recommendations and strategies addressing the major management problems associated with protected lands situated in the Pine Barrens. While the number of recommendations are too numerous to mention in their entirety, following are some of the more important ones: minimal use of pesticides; keeping the amount of land cleared to a minimum and in previously cleared areas to the greatest extent possible; avoiding the planting of invasive non-native species; protecting wetlands by controlling runoff and certain recreational activities; consideration of reintroducing extirpated species that were once native to the Pine Barrens; and in recognition of the profound, historical role fire played in shaping the species, communities and landscapes of the Pine Barrens, the preparation and implementation of a prescribed burn/wildfire management program.

Volume 2 of the plan details the existing conditions of the Pine Barrens. This section of the plan provides a fine overview of current relevant scientific information regarding the species, natural resources and communities of the Long Island Pine Barrens.--**John Turner**

Society News

May 9 meeting

Ann Johnson, ecologist for the Heritage Program in Florida will give the September talk.

Lisa Brown, DEC Division of Marine Resources, has asked for botanical (and zoological) information on coastal habitats for a restoration plan to be part of a restoration of Long Island Sound. She asked for reports on many habitats such as coastal forests, island communities, fresh water ponds, salt marshes, cliffs, maritime grasslands, etc. on the north shore, north of the Harbor Hill moraine.

Tom Stock is attempting to estimate the total biodiversity on Long Island - not just the 1800 species of vascular plants but also fungi, algae, animals, insects, etc. Anyone with information please get in touch with Tom.

Barbara Conolly reported on the highlights of the field trip to Muttontown Preserve. It was a beautiful day and the highlights were Ladies'-slippers in bud, two leaf-clumps of Rattlesnake Plantain, and a Kestrel sitting on a bluebird box.

Bob Laskowski reported that he had never seen seedlings of *Cryptomeria japonica* (reported last issue in the Gymnosperm Atlas). He thought the lack of *Ginkgo biloba* seedlings was because people only planted male trees. He reported European Larch (*Larix decidua*) seedlings as abundant at Pilgrim State Hospital. **Vince Puglisi** has seen seedlings at Mitchell Field as well. **Bob** wanted to know why Norway Spruce (*Picea abies*) seedlings should grow to 20' and then die before reaching maturity. There were no answers but **John Silba** said that he had seen second generation Norway Spruces with cones.

Bob Laskowski said that a new golf course in Suffolk County will have all-night lighting, and wonders what effect this will have on surrounding plants. **Bill Titus** said that the plants will not harden well. **Vince Puglisi** said that in cities, trees hold their leaves very late because they don't lose their chlorophyll on time.

John Silba presented a talk on Rare and Endangered Conifers of the South Pacific and Asia. He showed photos of plants from China, Korea, Vietnam, Australia, New Zealand, and especially New Caledonia. Most interesting was the reddish parasitic species that grows on the roots of *Podocarpus*.

June 13 meeting

There was no meeting held in conjunction with the Picnic. We had a wonderful picnic and walk to find *Uvularia pudica*.

Executive Board Meeting

The Executive Board met on May 23, 1995.

Elections for 1996-1997 officers was discussed. Solicitations of nominees is welcomed, send your suggestions to **Vince Puglisi**. The slate will be printed in the September-October Newsletter, and elections will be held on November 14th.

It was felt that the Goals and Directions of LIBS, "dedicated to the promotion of field botany and a greater understanding of plants that grow wild on Long Island" is being fulfilled.

There is talk about creating a New York State Native Plant Society. The board discussed this possibility and how LIBS could work with them.

A Master Plan for Montauk County Park is being written. Until this is completed we can not place the **Joe Beitel** Memorial Plaque there.

The Cranberry Bog Preserve booklet is about to be rewritten, it will be dedicated to the memory of **Joe Beitel**.

Eric will be working on a 5-year index to the Newsletter and a list of the issues that have been published. We will also make reprints available for a small cost.

The flora committee will continue to create dot maps as we record data for each species. We discussed a new installment for the published atlas. This would be on the Magnoliaceae and related families. We also discussed creating a LI rarity rank to reflect the status of a species on Long Island.

Election of LIBS Officers

Current terms for LIBS officers end this year, and a new slate of officers must be nominated and voted upon this November, 1995. The **Nominating Committee** is currently accepting nominations for the following offices: President, Vice President, Treasurer, Recording Secretary, and Corresponding Secretary. All other positions (Committee Chairs, etc.) are appointed by the President and approved by the Board. Each term is for two years. If you are interested in serving LIBS as an elected officer you may nominate yourself for a position, or you may nominate another member with their permission: please contact **Prof. Vincent Puglisi**, Nominating Chairperson, at 516-735-9458 (h) or 516-572-7575 (w). **Betty Lotowycz** and **Eric Lamont** also serve on the Nominating Committee.

Rare Plant Status List Available

The New York Natural Heritage Program documents all extant and historical occurrences of rare plants in the State. **Stephen Young**, the Heritage Botanist for New York (and a LIBS member), has recently prepared a new rare plant status list that just includes plants from Long Island (over half the plants on the state list are found on Long Island: 327 of 611). A lot of information is provided in the list; it is hoped that this information will help locate new populations of rare plants on Long Island. For your free copy of the new rare plant status list contact **Stephen Young**, NY Natural Heritage Program, 700 Troy-Schenectady Road, Latham, New York, 12110-2400.

Field Trips

29 July 1995 -- Cunningham Park, Queens. Meet at 10 am. **David Lean** will lead a field trip through rolling hills and kettlehole ponds of Cunningham Park, we will observe the rich fern flora and rare plants of the area. Contact David for details at 718-464-9476.

12 Aug 1995 -- Calverton Ponds. Meet at Grace's, route 111, 1/10 miles south of LIE exit 70, 10-12 am, space is limited, call 367-3225 to sign up. **Marilyn Jordan** will lead this short, leisurely walk to look at the ecology of Calverton Ponds and surrounding pine barrens. We will talk about the relationship of hydrology to the development of the Calverton Ponds flora. Be prepared for ticks (long pants) and wet walking. Bring hand lens or binoculars. We will see *Drosera intermedia*, *Eriocaulon*, etc.

19 Aug 1995 -- Anthony's Nose and Iona Island. Joint field trip with NYFA. Meet at 10 am at Iona Island. Enter Iona Island via the causeway, Park near the railroad tracks. On Iona Island we will visit a brackish intertidal marsh. We will see a rocky summit community on Anthony's Nose. The terrain is moderately steep. Wear footwear that can get wet for Iona Island and hiking boots for Anthony's Nose. The leader is **Bob Zaremba** (518) 463-6133, ext. 226.

16 September 1995 -- Breezy Point/ Fort Tilden, Queens. Meet at Fort Tilden Bldg. #1 at 10 am. To get to Fort Tilden take the Belt Parkway west to exit 11-S (Flatbush Ave South), cross the Marine Parkway bridge, bear right - exit for breezy Point,

exit off the bridge onto Beach Channel Dr., go 100 yds. to traffic light (opposite Coast Guard Station Rockaway). Turn left into Ft. Tilden, proceed 200 yds. to Bldg. #1. **Bob Cook** will lead a walk through the dunes of Breezy Point and Ft. Tilden to look for rare plants and migrating birds. Call Bob for more information at 718-338-3730.

24 September 1995 -- Sandy Hook National Recreation Area, Monmouth Co., NJ. Meet at the north end of parking lot B, which is the first parking lot on the right after you enter the recreation area, meet at 10 am. Take the Garden State Parkway to exit 117 (Keyport, Rte 36) and take Rte 36 east for about 13 miles, then follow the signs for the Sandy Hook exit, which will be on the right just after you cross the Navesink River. **Karl Anderson** will lead this trip through a variety of dune and dune woodland communities. Contact Karl at 609-267-2195 for more details.

30 September 1995 -- Jamaica Bay Wildlife Refuge. Meet at 10 am, at HQ. By car: take the Belt Parkway to Cross Bay Boulevard, take Exit 17 (Rockway). Cross the North Channel Bridge. Refuge is about 1 mile past the bridge on the right. By subway: take the IND A or CC to Broad Channel Station. Walk west to Cross Bay Blvd, then north about 0.75 miles to Refuge HQ on left. By bus: take the Green Lines Q21 to Refuge. We will see a varied fall flora of the salt marshes and their adjacent transitional habitats. Be prepared for wet walking and bring lunch, beverage, and insect repellent. Leader: **Patrick Cooney**, 221 Mt. Hope Blvd., Hastings-on-Hudson, NY 10706; (914)-478-1803.

Pocono Mountains Herbal Retreat July 10- 15

This is primarily a camping event. Meals will be prepared by all participants and teachers and will include foraged, wild foods. The retreat will be held on 700 acres of land with a lake. Teachers include Matthew Wood, **Ellen Evert Hopman**, **Tis Mal**, and **Jane LaForce**. Cost is \$250 (camping) or \$300 (cabin). For more information call Ellen Evert Hopman at 215-695-9494 or 215-233-0227.

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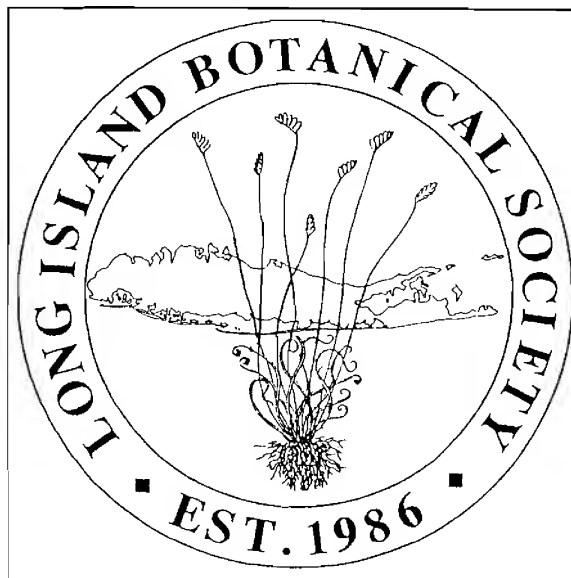
Founded: 1986; Incorporated: 1989.

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

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Vice President	Steven Clemants
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Hospitality	Nancy Smith
	Betty Lotowycz
Program	Eric Lamont
Editor	Steven Clemants

Membership

Membership is open to all, and we welcome new members. Annual dues are \$10. For membership, make your check payable to LONG ISLAND BOTANICAL SOCIETY and mail to: Lois Lindberg, Membership Chairperson, 45 Sandy Hill Rd., Oyster Bay, NY 11771-3111



LONG ISLAND BOTANICAL SOCIETY

c/o Muttontown Preserve
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